

The Department of Mechanical Engineering presents:

Dr. Henrik Bruus

Professor

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**Friday, May 7th
11:10AM-12:00PM
Bourns Hall A265**

On-chip Acoustophoresis on Living Cells

Abstract: Within the past five years there has been a significant increase in the number of novel applications of ultrasound standing waves for particle handling in microfluidic biochips. In spite of this growing interest, detailed measurements of the resonance line shapes are lacking. We present such measurements, published recently in *Lab Chip* **10**, 563 (2010), based on tracking of individual polystyrene microbeads during acoustophoretic motion in straight water-filled microchannels in silicon/glass chips subject to piezo-induced ultrasonic pressure fields. From the measured line shapes we extract the corresponding Q-values and thus gain insight in the nature of the acoustic energy dissipation in such systems. The talk will end with examples of on-chip acoustophoresis of living cells.

Bio: Prof. Henrik Bruus received his B.Sc. in mathematics and physics from the University of Copenhagen in 1984 and his M.S. and Ph.D. degrees in physics from the Niels Bohr Institute, University of Copenhagen in 1986 and 1990, respectively. He was post-doctoral fellow at Nordic Institute of Theoretical Physics 1990-92, Yale University 1992-94 and CNRS Grenoble 1994-96. He returned to the Niels Bohr Institute as an associate professor 1997-2001, before he joined the faculty at DTU Nanotech, Technical University of Denmark in 2002. He was promoted full professor there in 2005. He has (co)authored over 80 peer-reviewed journal papers, 100 conference contributions and 2 monographs, the latest being "*Theoretical Microfluidics*", Oxford University Press (2008).

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